

Claims:

1. An apparatus for altering the function of neural tissue in a patient comprising:

- a) an electrode adapted to apply an electromagnetic signal to said neural tissue;
- b) a signal generator that generates an electromagnetic signal having at least one frequency component above the physiologic stimulation frequency range, said frequency component having sufficient intensity to produce an alteration of said neural tissue, and said electromagnetic signal having a waveform that prevents heating of said neural tissue above a lethal thermal level when said electromagnetic signal is applied to said neural tissue through said electrode; and,
- c) an electromagnetic coupling of said signal generator and said electrode.

3. The apparatus of claim 1 wherein said electromagnetic signal is a radiofrequency signal.

4. An apparatus for altering a function of neural tissue in a patient comprising:

- a) an electrode adapted to apply an amplitude modulated signal to the neural tissue of the patient;
- b) a signal generator that generates an amplitude modulated signal having at least one frequency component above a physiological stimulation frequency range, said amplitude modulated signal producing an alteration of a function of the neural tissue while producing an average power deposition in the neural tissue corresponding to non-lethal temperature elevation of said neural tissue when the amplitude modulated signal is applied to the neural tissue through said electrode; and,
- c) an electromagnetic coupling between said signal generator and said electrode.

5. The apparatus of claim 4 further comprising:
a modulation amplitude control that adjusts the
amplitude of the signal modulation; and,
a duty cycle control that adjusts a ratio of signal ON
time to signal OFF time.

6. The apparatus of claim 4 wherein the amplitude
modulated signal has a peak voltage in the range of 10-30 volts
with a waveform having a total period of one second with an ON
time in the range of 10-30 milliseconds and a corresponding OFF
time of 990-970 milliseconds.

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7. A method for altering the function of neural tissue in a patient comprising the steps of:

- a) generating an electromagnetic signal having at least one frequency component above the physiologic stimulation frequency range, said frequency component having sufficient intensity to produce an alteration of said neural tissue, and said electromagnetic signal having a waveform that prevents heating of said neural tissue above lethal thermal levels when said electromagnetic signal is applied to said neural tissue; and,
- b) applying said electromagnetic signal to said neural tissue:

8. The method of claim 7 further comprising the steps of:
- a) sensing the temperature of the neural tissue;
 - b) generating a temperature signal representative of the sensed temperature of the neural tissue; and,
 - c) adjusting the intensity of the frequency component in response to said temperature signal in order to maintain the temperature of the neural tissue below said lethal thermal level when said electromagnetic signal is applied to said neural tissue.

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